RainScapes

Environmentally-Friendly Landscapes for Healthy Watersheds

Dry Wells

Why should I install a dry well?

Directing roof or driveway runoff to a dry well is an effective way to reduce stormwater runoff from your property, because you are capturing the stormwater and allowing it to soak into the ground. Dry wells are underground features that work well in areas where space is limited. Dry wells generally do not impact the visual appeal of your property as they are located along your driveway or underground and may be covered with soil and sod or other shallow-rooted plants.

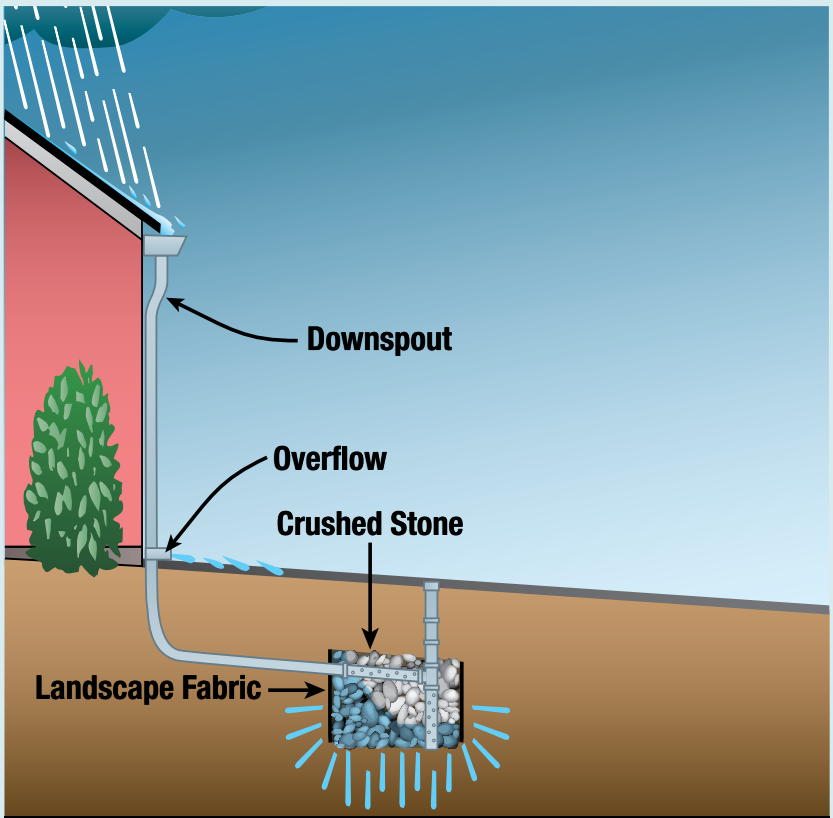
What are the benefits and incentives?

Dry wells reduce the amount of stormwater runoff and pollutants leaving your property, which can reduce downstream erosion, flooding, and water quality and stream habitat problems.

To learn more about the RainScapes Rewards Rebate, please visit www.rainscapes.org

What is a dry well?

A dry well collects stormwater from rooftops or hard surfaces such as your driveway. An underground pipe directs runoff from roof downspouts into the dry well. The dry well is an underground area that is filled with stone or gravel. Once water enters the dry well, it passes through the stone or gravel and then seeps into the underlying soil. Dry wells often use filter fabric to keep separation between the stone and surrounding soil. Dry wells reduce stormwater runoff, promote infiltration and groundwater recharge, and filter pollutants. Sometimes a proprietary storage device is used to increase storage efficiency and decrease the footprint of the dry well.



Dry Well for Roof Runoff

How to...

Assess Your Property

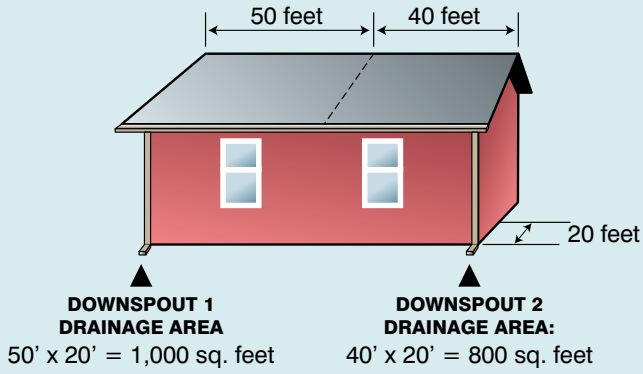
Assess your roof gutter and downspout system by walking around your property. Make your observations when it is raining, so you can see where the rain lands on your property and where it flows. Follow these basic steps to identify your site's drainage conditions:

To Collect Roof Runoff

1. Locate each downspout and determine where each downspout directs the rainwater. You may find that your downspouts are directed to your grassy lawn, a landscaped area, a storm drain, or your driveway. If a downspout currently discharges to a grassy or landscaped area, you may not need a dry well because some of the water is already soaking back into the ground. Dry wells should not be placed in poorly draining soil or placed perpendicular to steep slopes. The best place for a dry well is where downspouts discharge on or near a hard surface where the water cannot be easily absorbed (i.e., driveway, sidewalk, patio, poorly draining soils, etc.), or where the neighbor's yard is close and drainage is an issue.
2. Once you have identified downspouts for a dry well, you need to estimate the size of the roof area that contributes water to each downspout (see diagram). Based on your observations in Step 2 of where the rainwater flows, estimate the drainage area (square feet) to the particular downspout. Then estimate what percentage of the building's total roof area this amount represents. The drainage area and percentage of the building's roof area are required for the RainScapes Rewards Rebate application. See the figure below for an example calculation.

Calculating Percentage of a Building's Roof Area:

Total roof area for building:
20 ft x 90 ft x 2 sides = 3,600 sq. ft.

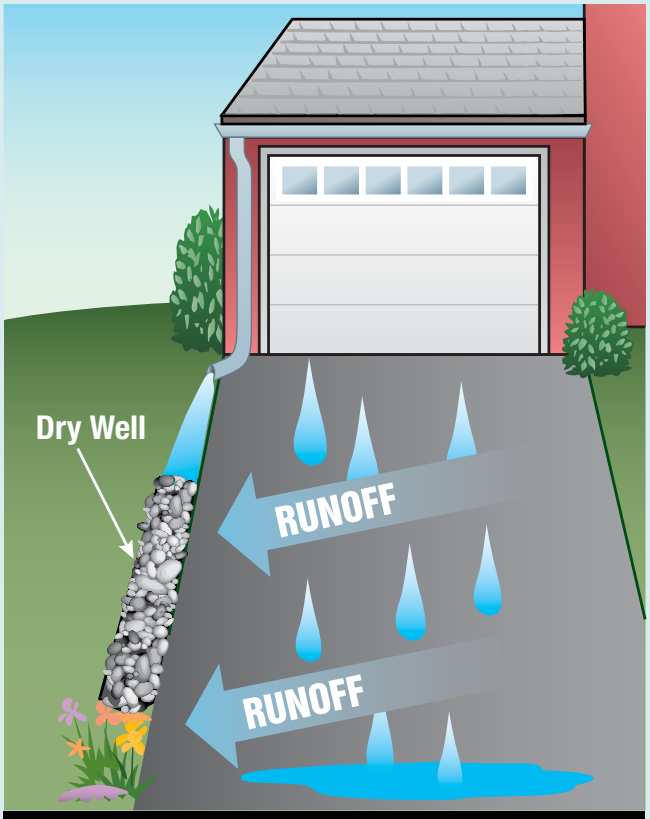


Downspout 1, total drainage area: 1,000 sq. ft.

Downspout 1, percentage of total roof area:
1,000 / 3,600 = 0.28 (28%)

To Collect Driveway Runoff

Linear dry wells (infiltration trenches) can be added along driveways to collect and infiltrate runoff. You can capture runoff from part of your driveway using a trench drain or capture runoff from the entire driveway by relying on the slope of the driveway to send water to a dry well that runs along the side of the driveway.



Driveway with Adjacent Dry Well

How to...

Design and Plan

Determine locations on your property where excess water could be routed for infiltration.

Make sure you have enough space to fit a dry well on your property. The Montgomery County Department of Permitting Services (DPS) recommends the following sizing for dry wells that collect roof runoff. It is recommended that a dry well that is deeper than 2 feet be dug by a qualified professional.

Roof Square Footage	Dry Well Size (length by width by depth in feet)
100	3 by 3 by 3.5
200	4 by 4 by 3.5
400	6 by 6 by 3.5
500	6 by 6 by 4
1,000	9 by 9 by 4

Linear Dry Wells by Driveways

A do-it-yourself option for dry wells is a linear dry well. While the dimensions of a linear dry well along a driveway may vary, it is recommended that linear dry wells be approximately 1-foot wide and no more than 2-feet deep and be located to capture runoff from the driveway.

Follow these basic steps to identify the best location in your yard for a dry well:

- Before digging, have underground utility lines marked by calling “Miss Utility” at 1-800-257-7777 or submitting an Internet Locate Request for homeowners at http://www.missutility.net/iticlite/
- Avoid marked underground utilities by installing the dry well at least 4 feet from a marked utility line
- Locate your dry well a safe distance from adjacent buildings and properties to provide a safe overflow area:
  - » Downhill of building foundations or basements

Distance From	Length
Property lines	5 feet
Downslope from foundations	10-20 feet
Septic fields	30 feet
Well locations	100 feet
Buildings downhill of dry well	25 feet

Can I do this project myself?

Standard dry wells must be installed by certified contractors to be eligible for the RainScapes rebate. Linear dry wells along a driveway may be installed as a do-it-yourself project.

If I decide to hire a contractor, what questions should I ask?

- What experience do you have installing dry wells?
- Are you certified with any nationally recognized organizations?
- Can you supply references from previous clients?
- Are you insured?
- What is included in your services?
- What type of system would you recommend for my property?
- Will my dry well need an overflow drain?
- Do you intend to use subcontractors?
- How long do you expect the project to take?
- Do you offer a guarantee for your work?
- Are you available to perform ongoing maintenance of the dry well if needed?
- Can you confirm whether a permit will be needed?
- How much will your services cost?

How to... Build and Implement

The Montgomery County Department of Environmental Protection (DEP) is currently accepting rebate applications for two types of dry wells: standard dry wells that collect roof runoff and linear dry wells that collect driveway runoff. Both types of dry wells have construction details developed by the Montgomery County DPS. These details are provided at the end of this module.

Dry Well to Collect Roof Runoff

Once you have selected the appropriate site for the dry well, your contractor may need to reroute your downspout. If necessary, they may cut the downspout, attach an elbow over the downspout, and connect the elbow to a perforated pipe.

Dry Well to Collect Driveway Runoff

A linear dry well placed along a driveway may be installed as a do-it-yourself project.

Installation steps include:

- Dig out the dry well.
- Line the sides of the well with landscape fabric.
- Fill the well with crushed, clean stone. You can place decorative stone above the clean stone.

If you choose to use a pre-fabricated or proprietary dry well, check with DEP RainScapes to verify that it is County-approved.

Dry well paired with conservation landscape

Costs

Depending on the size of the dry well system, costs vary, but are typically at least $1,500 including installation.

Maintenance

Minimal routine maintenance is required for a dry well:

- Remove debris from roof gutters and dry well. If debris is significant, or tree canopy is an issue, a debris filter in the gutter system may be necessary to prevent clogging.
- Clean and repair inlets and outlets.
- Visually assess to ensure that water is infiltrating and the dry well has not become clogged. Excess debris on top of the dry well can be removed by hand. Clogged dry wells should be refurbished or replaced.
- Weed, if needed.

Different Applications

Multi-System Approach with Other RainScapes Techniques

Dry wells can help absorb the overflow from other RainScapes techniques such as rain barrels or green roofs.

The Charles River Watershed Association's Smart Storm Rainwater Recovery System is an example of a multi-system approach that uses rain barrels/ cisterns that discharge into a dry well: http://www.crwa.org/projects/smartstorm/mainpage2.html.

For More Information

http://permittingservices.montgomerycountymd.gov/permitting/pdf/DrywellRoofDrain.pdf

http://permittingservices.montgomerycountymd.gov/permitting/pdf/DrywellDriveway.pdf

A list of contractors who have completed the DEP's RainScapes Training Seminar is provided at www.rainscapes.org

As a reminder, dry wells and other Stormwater Management practices that are required by DPS through the County permitting process are not eligible for RainScapes Rebates.